

### Abstract

Methods for making glass-ceramics comprising  $\text{Al}_2\text{O}_3$ , REO, at least one of  $\text{ZrO}_2$  or  $\text{HfO}_2$  and at least one of  $\text{Nb}_2\text{O}_5$  or  $\text{Ta}_2\text{O}_5$ . Glass-ceramics according to the present invention can be made, formed as, or converted into glass beads, articles (e.g., plates), fibers, particles, and thin coatings. Some embodiments of glass-ceramic particles according to the present invention can be are particularly useful as abrasive particles.

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